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Manual Training in the Schools

By

WILLIAM T. BAWDEN.

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NORMAL SCHOOL QUARTERLY

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Manual Training in the Schools.

It is the purpose of this article to discuss briefly the nature of manual training, to state some of the reasons why it should be given a place in the course of study, and to set forth the general plan upon which it should be conducted.

MANUAL TRAINING DEFINED.

"Manual training is any form of constructive work that serves to develop the power of the pupil thru spontaneous and intelligent self-activity." (Definition adopted by the Eastern Manual Training Teachers' Association.)

The aim of the instruction, as indicated in this definition, is the development of power in the individual. By power is here meant not simply power in the sense of skill in the handling of tools, but ability to use the hand as an agent of the mind in the expression of thought. We may have training of the hand without any tools at all, as in some forms of basketry, weaving, modeling, etc.; or we may have training that involves a considerable variety of tools, as in bench work. But whatever the form of work selected the special technical skill that results from its use is only of subsidiary value and by no means constitutes the chief aim. The reason why manual training is put into our schools is because it contributes to the complete and rounded development of the

individual; it aims to develop, first, thought power and to give play to the creative instinct; second, control of the physical organism by the mind; and, third, skill in the use of that organism in the expression of thought.

The secondary importance of mere skill may be brought out by a comparison of manual training with trade instruction. The apprentice learning a trade has as a goal set before him the attainment of ability to perform certain tool-operations with sufficient accuracy to satisfy the high standards of commercial utility and finish, and at a rate of speed that will earn him a livelihood in competition with other workmen. When a new piece of work is set before him he is usually kept at it until he masters it; he must perform the same operations and go thru the same movements over and over again until he acquires the necessary accuracy and speed. It is a well-known principle of psychology that in order to engage the attention the object of thought must be continually changing and bringing in the element of the "new;" and when a given process, by reason of its repetition, ceases to be an expression of thought on the part of the worker it ceases to contribute to the development of thought power, becomes a mere monotonous grind, and its principal effect upon the worker is a sort of mechanical skill.

HANDWORK PROMOTIVE OF SOCIAL EDUCATION.

Handwork in the school serves to interpret the important role the hand of man has played in human progress. Modern civilization is based to a large extent upon material or industrial progress. By this statement we do not mean to ascribe too great honor to the material nor to detract from that which is due to the spiritual. It is true that great advances have been made along intellectual and ethical lines. Vast bodies of knowledge have been reduced to exact sciences, and almost unlimited quantities of information, interesting, useful and indispensable have been gathered together and catalogued for the benefit of the human race.

It does not minimize the importance of all this to say that man's *hand* has done much to bring about this wonderful thing that we call modern civilization. It has been generally agreed that two inventions are pre-eminently entitled to credit in this

connection—the printing press and the steam engine; each the product of some man's hand as well as brain, and each doing work that would have to be done by men's hands or be left undone. These are conspicuous examples, and their significance is apparent upon a moment's reflection; but equally typical examples may be found all thru life. The one thing that characterizes life today and distinguishes it from what it was two hundred years ago is the fact that man has set more forces to work "doing" things. After the various domestic animals had been exploited to the limit of their capacities there was still work to be done. Man still dreamed of greater things to be accomplished. Horse-power and ox-power being inadequate, man turned his attention to the natural forces that he found so free and abundant in his environment. So wind and water have been the subjects of endless experiments for the utilization of the power they were observed to contain. Then steam, hot air and various gases, and more recently electricity, have been set to work. In all cases these forces must be utilized thru the medium of a machine or some mechanical contrivance which man must build with his hands; and after the machine is built it must be controlled and tended by hand.

Enough has been said to indicate how much of our civilization is due to man's ability and willingness to use his hands and to what extent further progress is dependent upon the acquisition and application of this ability. If it is true that a person who has studied some musical instrument will be able to appreciate instrumental music more completely because of that study; and if a person who has attempted to draw or paint under good instruction will be able to see more in the artistic productions of others; it is equally true that a person who has learned to do things with his own hands will be the better able to recognize merit in the handiwork of another; and, conversely, he who has no personal knowledge of what the hand can do and of how things are done must fail to apprehend the significance of much that he sees in the world about him.

Instruction in manual training, then, will furnish the pupil with a background of personal knowledge and experience in the light of which he may be able to interpret more intelligently the material and artificial features of his environment, and will lay the basis for a wider and genuine social sympathy.

HANDWORK TYPICAL OF ACTIVITIES IN REAL LIFE.

Nearly everywhere in the history of education may be found the aim, more or less direct, of individual development for social efficiency. The meaning and implication of the term "social efficiency" have varied as society itself has changed from one period to another, and ideas as to how to bring about this efficiency have also varied greatly. But in recent years it has more and more come to be accepted that the way to prepare for social efficiency is thru social experience. As some would have it: "Education is not preparation for life; education *is* life." In this connection let me make the following quotation from Dr. Dewey's "Pedagogic Creed": "I believe that the school is primarily a social institution. Education being a social process, the school is simply that form of community life in which all those agencies are concentrated that will be most effective in bringing the child to share in the inherited resources of the race, and to use his own powers for social ends. I believe that education, therefore, is a process of living and not a preparation for future living.....I believe that much of present education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed. The value of these is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do; they are mere preparations. As a result they do not become a part of the life experience of the child and so are not truly educative.....I believe.....that the primary basis of education is in the child's powers at work along the same general constructive lines as those which have brought civilization into being. I believe that the only way to make the child conscious of his social heritage is to enable him to perform those fundamental types of activities which make civilization what it is. I believe, therefore, in the so-called expressive or constructive activities as the center of correlation. I believe that this gives the standard for the place of cooking, sewing, manual training, etc., in the school. I believe that they are not special studies which are to be introduced over and above a lot of others in the way of relaxation or relief, or as additional accomplishments. I believe

rather that they represent, as types, fundamental forms of social activities; and that it is possible and desirable that the child's introduction into the more formal subjects of the curriculum be thru the medium of these activities." (p. 7 ff.)

To reorganize our schools upon the basis of the principles here laid down would in truth mean an educational revolution; in certain features entire reconstruction is indicated. But our elaborate courses of study and our ponderous systems of schools with the acquired momentum of years do not readily respond to new forces. Altho certain theories of intellectual development have been shown to lack foundation in fact, nevertheless many features of curriculum and method based upon these supposed laws still persist in practice. When life has changed so marvelously in every other aspect as it has in the last twenty years it is not rational to expect education to continue on the same old lines.

Perhaps a reference to statistics will bring out the thought of the particular contribution to preparation for complete living now under discussion; viz., that manual training introduces into the school certain selected lines of work that are typical of activities carried on in real life. If activities—and we are speaking now more particularly of manual activities—have no special significance attached to them in real life there is no reason why they should claim very much of the limited time set apart for the purpose of education. If, on the contrary, the hand plays any prominent part as a tool in the doing of the world's work, and the ability to use it as such has anything to do with determining the present comfort and future independence of the individual, then must its rightful place in education be recognized and its claim for attention justified.

According to the United States census for 1900 the total number of individuals reported as engaged in gainful occupations was 29,286,000. This number is classified according to vocations:

Agricultural pursuits—10,438,000, or 35.7 per cent.

Professional service—1,264,000, or 4.3 per cent.

Domestic and personal service—5,691,000, or 19.4 per cent.

Trade and transportation—4,778,000, or 16.3 per cent.

Manufacturing and mechanical pursuits—7,113,000, or 24.3 per cent.

During the last fifty years there has been a marked decrease in the proportion of the number of individuals engaged in agricultural pursuits, and there has been a large increase in the percentage of those employed in trade and transportation and in manufacturing and mechanical pursuits. These figures show what a large part manual work and especially the constructive industries play in our national life. It is instructive to note what a large proportion of these methods of gaining a livelihood employ the hand more or less directly. We are pre-eminently an industrial nation, and if we are to maintain our supremacy among the nations of the world we must be even more than we have been a manufacturing nation. This can only be accomplished by raising up generations of children who can do something with their hands. This does not imply, as has been already indicated, the teaching of trades in the common schools; but it does mean that children should be brought up to know something at first hand about "things," the realities of life, and the elements of such typical industries as it may be possible to introduce into the work of the school.

It is to satisfy this demand that we now find in the schools such activities as weaving and basket making, modeling in clay, work in paper and card-board, tin and iron and wood, and the rest. They are put there, not that the children may by means of them become self-supporting, but that the school may be as nearly as possible a counterpart of that life upon which these children are so soon to enter.

HANDWORK A MEANS OF EXPRESSION ESSENTIAL TO COMPLETE MENTAL GROWTH.

Colonel Parker's "Talks on Pedagogics" contains a chapter in which expression is defined as "the manifestation of thought and emotion thru the body by means of the physical agents." (p. 224.) Of the nine modes of expression there enumerated, *language* is given the chief place as a means of studying human development. "Next to language may be placed the tools and instruments which man has used thru all the ages in manifesting his needs and his aspirations to others."

Man has been called a thinking animal as if that characterization were sufficient to distinguish him from the rest of creation. But man is known to be a thinking animal solely by the expression of his thought. In the chapter already referred to occurs this passage: "The inward impulse or desire finds expression in outward form or object; as the Creator manifests himself to man thru forms and qualities of matter so man manifests himself to his fellow men by formal creations. The externalization of thought is by means of the physical action called *skill*.... The exercise of the physical agents in acts of expression.....is brought about by the striving of the will to make skill in expression adequate to thought; the health, growth, development and elaboration of the body as an instrument of attention and expression depends mainly upon the variety, kind, and quality of acts of expression..... Expression demands either reflection or attention, or both. Attention has for its basis the motive of expression. This implies that the trend of all human thought is toward expressive action; that thought which does not end in action dies or stagnates." (pp. 228-229.)

The making of things has been stated to be "the material basis of life and living." He who has never "made" anything and is not conscious of any ability to make anything has indeed failed to qualify as one of the "lords of creation." It is the function of manual training in the process of education to assist in the unfolding of powers otherwise neglected and yet essential to complete living—powers which the individual needs for the mastery, first, of himself, and then, of his environment.

CULTIVATION OF USEFUL HABITS.

Manual training involves the cultivation of habits of neatness, regularity, perseverance, self-criticism, self-confidence, individual initiative, etc. If education is, as Professor James describes it, "the organization of acquired habits of conduct and tendencies to behavior" ("Talks to Teachers," p. 29), then surely manual training is entitled to consideration as an educational factor of great value. It may not be easy for one who knows nothing at first hand of how instruction in handwork is given in the schools to appreciate the extent of its usefulness in

this direction. Of course, there is a question as to whether any given habit is active or effective outside of its particular setting. Persons have been observed to maintain the utmost regularity in certain directions who are just as derelict in others. But, however that may be, since man is a creature of habit the acquisition of any good and useful habit is certainly so much clear gain.

Time would fail to discuss any of these habits in an extended way, but more than a mere passing mention should be given to the salutary influence manual training exerts in the direction of developing the spirit and habit of self-criticism. Many of the tasks set before pupils, old and young, fail wholly or partially of accomplishing their intended results. There are too many ways of getting assistance here, an explanation there, and the key to the solution of a knotty problem somewhere else, and even the doing of the work entirely by others. Inasmuch as the individual must "learn to do by doing" he must sacrifice his own growth when he substitutes the performance of another for his own. Manual training in the school presents a line of work in the prosecution of which every achievement shows for just what it is. A certain amount of thought and labor are required to produce a certain result upon a piece of wood; and the condition of that piece of wood at any stage of the process is a declaration, inevitable and inexorable, of the amount of thought and labor that have been expended and the amount still necessary. Instruments of precision, or tools for measuring and testing the accuracy of results, are a part of the regular shop equipment which the pupils are taught to use and apply constantly to their work. The pupils themselves are able to test their own work and are able to judge intelligently of their progress. They are not aiming at an ideal that exists only in the mind of the teacher—an ideal to the child in many cases unknown and in some cases unknowable. Instead, the aim is something comprehensible, and because concrete it is capable of being dealt with by the child-mind. In most cases the thing to be done appeals to the child as a goal desirable of attainment and worthy of his endeavor quite irrespective of the fact that it was set before him by the teacher.

That very desirable frame of mind we commonly denominate self-confidence, or self-reliance, is one of the choice fruits of a well-balanced education that reaches its greatest perfection under the

cultivation afforded thru handwork. Each pupil is judged and stands or falls by the results of his own efforts; he learns that nothing will make a showing save genuine, earnest work. Having apprehended the end that is to be reached, and having received advice as to the method of procedure, he must personally go thru every step of the process to the end. At each step there is required a decision, an act of the will, to determine the immediate action; the result of this action must be considered in its bearing upon the ultimate end desired and in determining succeeding action. In this the pupil feels himself thrown upon his own resources. He sees the necessity of making some decision in view of the facts before him and then of carrying that decision out into action. This leads up naturally to our next statement.

CO-ORDINATION OF THE PHYSICAL AND MENTAL.

Manual training serves to promote the co-ordination of the motor organism and the mind.

"Brain and mind alike," says Professor James, "consist of simple elements, sensory and motor." (Psychology: Briefer Course, p. 105.) "The whole neural organism, it will be remembered, is, physiologically considered, but a machine for converting stimuli into reactions; and the intellectual part of our life is knit up with but the middle or 'central' part of the machine's operation." (Ibid, p. 370.)

Every normal human being is provided with an organism of which the mind is the vital agent. This organic apparatus has two important functions; one is to carry to the brain the various sensory impressions, and the other is to carry to the appropriate muscles the mandates of the mind and cause them to be executed. Now it is of the utmost importance that this apparatus be adjusted so that its workings can be depended upon. The sensory and motor elements must be co-ordinated. There is a common type of humanity in whom this connection is not well made. Those persons who are always doing the wrong thing at the wrong time do not do so always thru ignorance; in very many cases they know what they want to do or what they ought to do but fail because of their lack of ability to carry their good intentions into effect. The time-worn statement that "knowledge is power" is only a half-truth

that, in the case of the ordinary individual, needs its complement, "practice makes perfect." In addition to the knowing and the willing we must have the doing.

Dr. Gilbert would make this point prominent in the argument for manual training: "The highest activity of the mind is creation, the conceiving a new thing and carefully working out in detail the conception, and then putting it into actual realization. The man who conceives, designs, and makes things is performing the highest function of mind. This is what is done in a proper course of manual training. The imagination is stimulated, expression is encouraged, and then production follows and completes the educational circle. The boy who has thought out a tool, or a machine, or even a definite piece of carpentry, has portrayed his conception in a drawing upon paper, and then has made it, has really accomplished more and has gotten more power than would have been possible thru any amount of learning about things. .....The advantage of manual training work for young people is its reality. It is so tangible. The boy has ideas, but words for their expression escape him; he is frequently embarrassed and unable to express himself in acts; but give him tools and things to work on, and he possesses himself at once, and thru the exercise of this highest function gains that tremendous power that comes in no other way." (Charles B. Gilbert: Manual Training in the Public Schools; Proceedings of the Eastern Manual Training Teachers' Association, 1901, p. 102.)

The key-note of the new education is *doing*. It is not simply to add a new frill to the educational garment that we advocate the method of "learning by doing." Far from that, "it is the vital element in all education, physical, mental, and moral." Life itself is made up of *action* rather than dreams and reveries and contemplation. It is not sufficient to read and talk about noble living and right action; will power is developed only by its exercise. The pupil must be required to make repeated decisions and thus develop ability to determine and regulate his own activities.

Manual training, therefore, deserves the prominence given it as an educational factor because it does enforce the use of the faculties and because it does cultivate nerve-power, self-control, and decision.

VARIETY OF MATERIALS AND PROCESSES.

Handwork in the school should introduce a variety of materials and processes. In order to bring in this variety it is our purpose to make use of the following, as circumstances may permit: Paper and card-board work, cord-work, weaving or textile work, building with blocks, modeling in clay, basketry, bead work, work in tin and iron, elementary woodwork, and bench woodwork.

It is well to note why variety is essential. The two principal reasons arise, one from the nature of the child, the other from the nature of the work. In the first place, it will be apparent to any one acquainted with the wide range of the child's interests that no one material or line of work would suffice to hold his attention or to keep him profitably occupied for any considerable period of time. And in the second place, no one of these lines of work presents ideal conditions for all kinds of work with all children. Each one of these mediums possesses certain characteristics that recommend it for training along certain lines. Some work calls for accuracy and regularity, while other kinds of work allow for freedom of expression; some materials are hard and unyielding, while others are more plastic and flexible. All of these qualities are valuable in their due proportion and each should have its place.

MANUAL TRAINING FOR BOTH SEXES.

Boys and girls alike should receive the benefits of manual training. As has been already pointed out, the end in view is not the making of apprentices to any trade, but the full, rounded and balanced development of the individual; and that this be accorded to pupils of one sex and denied to those of the other would be a discrimination both unjust and indefensible. This does not mean that no differentiation could be made in the work of the boys and the girls. Neither does it mean that girls must be taught nothing that is not essentially feminine and the boys nothing that is not essentially masculine.

TEACHERS OF MANUAL TRAINING.

Manual training should be conducted by the regular grade teachers thru the first six years of the elementary school, and there-

after by special teachers. Most of the processes suitable for use in the lower grades are easily mastered by the regular teachers. There is no reason why the average teacher should not qualify herself, by attendance at summer school or otherwise, for the successful prosecution of the work. For the more technical work of the upper grades, however, special teachers are essential.

LINES OF WORK TO FOLLOW.

Handwork should proceed along lines that appeal to the interests of the pupil. Statements bearing upon this point have already been made in this paper and it is perhaps not wise to pursue the argument any further. It is a direct corollary of Froebel's great law of self-activity and it ought to be effective in all departments of school practice. The only question is as to how to bring it about. It is physically impossible to execute a scheme of education that would provide that every pupil should be engaged only in such work as for the time being interests him, and it would be pedagogically unwise to turn a group of children loose among tools to make anything they choose.

It seems to be essential to the pupil's continued interest in manual work that he be made conscious of progress—he must feel his own increasing efficiency. To bring this about requires that things be laid out in some orderly way so that there may be a progression from the easy to the more difficult; but so far as possible the individual tastes of the pupil are consulted and his interests are appealed to.

ORGANIC PLACE OF HANDWORK IN THE COURSE.

Manual training should be an integral part of the course of study. One of the objections that has long been urged against manual training in the school is that there is no room for it. It has suffered the fate of the other so-called "special" studies and in most cases has been simply "patched on" to an already overcrowded curriculum. The course of study that was adopted one hundred years ago was planned to meet the demands of the then existing state of society; and it seems almost incredible that those who are responsible for the education of today should be content with a course of study that is but little more than the old one "revised and enlarged" and "brought down to date" by the addition

of a few "specialties," apparently heedless of the fact that in the meantime society and civilization have changed so greatly.

When the individual grows up and goes out into the world he is not going to have to read and write and spell any more than he is going to have to *do* other things. His success in life is going to depend pretty largely upon his ability to meet situations demanding clear thought and prompt and intelligent *action.* Since "doing" plays such a prominent part in real life it ought to play a correspondingly prominent part in any plan of education that undertakes to prepare for that life. It is clear that manual training subserves this purpose and the indications are that the curriculum of the not very distant future will recognize this fact officially and give it its rightful place. It is highly probable even that manual work will form the very core and foundation of the curriculum for the elementary school. Indeed this claim is already being made for manual training as noted in the quotation from Professor Dewey, and in the following from Miss Mitchell: "Constructive work, manual training, industrial art, drawing, painting—handwork of all kinds, by whatever name—form a large part of the social occupations of the school life. The question is as to their place and educative value. Psychology as well as experience proves them to be among the central interests of young life, the strongest forces in the school room, the most economical means to power and knowledge. Grouped together with other social occupations, they should be the center of the course of study, and about them should be ranged all the other subjects of the curriculum." (Manual Training Magazine, vol. 3, no. 1, p. 13.)

Until the problem of adjusting the curriculum to the demands of modern civilization has been scientifically worked out we must accept conditions as they are and make the most of them. This means that for the present at least we must take a certain amount of time from other studies and devote it to manual training. But as the result of such an arrangement we must not suppose that the studies thus subtracted from are to be weakened. On the contrary manual training will impart new vigor to the rest of the work and there is no reason why any of it should suffer. Take mathematics, for example; handwork is so closely related to arithmetic and its demands upon the pupil's knowledge of that subject are so frequent that it acts as a positive stimulus to its study. The

same can be shown to be true to a greater or less extent of other studies.

Provision for manual training in the daily program is in many cases simply a question of arrangement. Wherever possible, study periods rather than recitation periods are used for this purpose, so that with a small amount of outside study the regular program undergoes but little change. In the upper grades where the classes are obliged to go to a special shop time can be saved by having one handwork period the first thing in the morning or afternoon session and the other the last thing. The first class would then report from their homes directly to the special teacher and the second class would be excused from the shop to go home. In a great many schools successful beginnings have been made by doing all the handwork outside of school hours (before and after school, during recess periods, and Saturdays) without interfering with the regular work in any way. The interested teacher will not fail to find a way and she may count on the interest and cooperation of her pupils.

EQUIPMENT AND MATERIALS.

Considerations of expense have frequently prevented the introduction of manual training into schools where its value has been recognized. This ought not to be, however, for it has been shown that when necessary any work that is worth while can be done at practically no expense. A modest and inexpensive beginning in good hands is far better than an extravagant and costly experiment ill-conducted. The following extract from the Manual Training Magazine, may be of interest:

"In a recent address, Capt. C. E. Vawter of the Miller Manual Labor School at Richmond, Va., gave some pertinent figures as regards the cost of hand training.....The manual training in the lower grades should be taught in the regular schoolroom by the regular teacher at an average cost not exceeding one dollar per pupil a year, even if the equipment lasts only one year.....The higher grades will include whittling and benchwork, and will require a special teacher who can give instruction in either of the departments to 600 pupils, if one lesson of ninety minutes is given a week, and to 300, if two lessons of ninety minutes are given each

week. This would cost per pupil 66c for 300 pupils and $1.33 for 600. The cost of thirty pupils can be formulated as follows:

SUBJECT	EQUIPMENT	MATERIAL	TOTAL
Construction in paper	$ 8.70	$ 8.00	$16.70
Construction in pasteboard	13.65	2.00	15.65
Clay work	1.80	1.80	3.60
Basketry and Weaving	3.00	4.20	7.20
Whittling	90.00	6.00	96.00
Benchwork	330.80	37.40	368.20

The equipment will last for several years, while the material is estimated for only one year." (Vol. 5, p. 120.)

Those who wish to inquire further into this phase of the work should read "The Economics of Manual Training," by Louis Rouillon; Teachers' College Record, vol. 2, no. 5; price, 20c; published by the Columbia University Press, New York.

See also two articles on "The Cost of Manual Training" by William E. Roberts, Supervisor of Manual Training, Cleveland Public Schools; Manual Training Magazine, vol 3, pp. 151, 217.

SOME REFERENCE HELPS.

For any who may wish to read up more fully on some of the aspects of manual training the following references are among the best:

Dewey: School and Society; University of Chicago Press.

Dopp: Place of Industries in Elementary Education; University of Chicago Press.

Chamberlain: Paper and Cardboard Construction; Whitaker & Ray, San Francisco.

James: Indian Basketry; Henry Malkan, New York.

Tinsley: Practical and Artistic Basketry; Kellogg, New York.

Wheeler: Woodworking for Beginners; Putnam, New York.

Keeler: Our Native Trees; Scribner, New York.

Pinchot: Primer of Forestry; Government Bulletin.

For additional material consult Chamberlain's Bibliography of the Manual Arts, published by Flanagan, Chicago. The "Manual Training Magazine," published by the Manual Arts Press, Peoria, Ill., is a helpful publication.

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The School Excursion and the School Museum as Aids in the Teaching of Geography

By

D. C. RIDGLEY

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The School Excursion and the School Museum as Aids in the Teaching of Geography.

It is my purpose to consider the advisability of using some of the helps in the presentation of the subject of geography which will require the teacher and pupil to go beyond the confines of the schoolroom to obtain them. These helps are not intended to supplant the time-honored textbooks and wall maps, but to put new and fuller meaning into them, to make the book and the map the servant not the master of teacher and pupil.

Geography is one of the foremost subjects in the curriculum in the study of concrete material. Its subject-matter is objective. It considers the earth in its relation to man. It includes a study of the practical things of every day life at home and abroad.

To give to the pupil the necessary first-hand knowledge in the study of geography requires that the pupil and the thing to be studied be brought together face to face and at short range. This can be done in one of two ways: by taking the pupil to the thing; or by bringing the thing to the pupil. The first is the most effective way of studying the various topics of home geography and leads to the intelligent and frequent use of the school excursion. The second is the most effective way of giving first-hand knowledge concerning the geography of regions beyond the home locality and leads to the building and constant use of the school museum.

I wish to speak of each of these aids in the teaching of geography not from the theoretical standpoint, but as I have made use of them in classroom practice. My experience with the school excursion has been with classes from the third year thru the remaining years of the grammar school in a public school of a thousand pupils in the city of Chicago and in the lower grades of the Training School of Normal, also in the high schools of Chicago and in two of the state normal schools of Illinois. Classes have ranged in numbers from half a dozen to eighty. My use of the school museum has extended over the same range of the curriculum with the addition of the first and second grades.

THE SCHOOL EXCURSION.

The school excursion is an expedition made by the pupils of a class under the immediate direction of the teacher for the study of some particular topic in the school work. The pupils are responsible to the teacher for attention, interest, and good behavior to the same extent as in a class exercise in the schoolroom.

Successful school excursions depend upon the hearty co-operation of school officials, principal, teacher, pupils, and parents. All must believe that it is a good thing and work harmoniously and earnestly to make it as successful as other school exercises. The school board and superintendent must recognize the value of such work; they and the principal must willingly permit the use of school time to the extent of a half-day at most for the work. The teacher must be as enthusiastic in this work as in any other if she expects to reap educational results. She must have studied the field of investigation previous to the time of the class exercise and carefully planned the steps of the lesson. To fail to do so means great loss in the net results of the lesson. The pupils must feel that an outdoor lesson is of as great importance and value as any other school exercise. Its importance is evident to the pupils when it is clearly brought before them that the board of education, superintendent, and principal have permitted school time to be used for the lesson.

Much better spirit is manifest and much better results obtained when attendance of each pupil on any particular excursion, especially if at considerable distance from school, is left to the voluntary decision of the parent. The excursion is not as effective as it should be, if the discussion of results in class does not make every one who did not go wish that he had gone.

In Chicago the rules of the board of education require that no excursion be undertaken without the consent of the superintendent or district superintendent of schools, and that no pupil shall be permitted to go on any excursion without the written consent of the parent or guardian.

Many of the teaching force of the Chicago schools read this rule of the board and say that there are too many restrictions and too much red-tape to do anything in the line of excursions. I was inclined to the same opinion until I learned by trial that each requirement instead of being a hindrance was a very decided help in arranging for and carrying out each excursion.

If the pupils said to their parents that Mr. Cooley, our superintendent, or Mr. Lane, our district superintendent, had granted permission to have an outdoor lesson in geography, it immediately lent dignity to the event. It was not so likely to be considered a plan of the teacher and pupils to have a picnic.

The written consent of the parent saves the teacher from any criticism of having taken the pupil off on a useless trip which did not in any way meet with the parent's approval. In order to save trouble to the parents, the pupils carefully copied a letter of request placed on the blackboard by the teacher, carried it home and were remarkably successful in obtaining signature and necessary car fare.

One hundred and ninety-five pupils out of a membership of two hundred in fourth and fifth year work were taken in sections of twenty-five to fifty to the Des Plaines River, seven miles away. The five remaining pupils were ill or had work at home immediately after school. All of the forty-eight pupils of the seventh

year, save one who had made the trip previously, went to the stock-yards and Swift's Packing House. Ninety per cent or more of each class in the high school went on the excursions.

I feel that all excursions taken in connection with the various classes from the third year thru the normal school have been more effective as lessons in geography than the same time spent in class-room instruction. Each excursion furnishes the best possible material for class-room instruction for several days or a week after the trip. The region visited need not be peculiar or striking to the ordinary observer. The almost featureless region of Chicago and vicinity is rich in topographic forms in miniature. So is almost every locality.

I will now indicate some of the particular trips taken by classes of various grades and the scope of the work considered in some of these classes.

In excursions of the third year, classes were taken to examine the laying of the cement walks about the school building. They observed the material and its use, also the work of different men engaged.

In another instance while studying the building of homes third year pupils made trips to a house in process of construction, examined the foundation of brick and mortar, learned that mortar is made of sand and lime, examined the studding, weatherboarding, rafters, roof, arrangement of rooms as indicated by studding, and went to the gravel pit to see how sand is screened and removed from the pit. En route they noted a valley with its divides, slopes, and stream.

While standing at the bottom of the valley by the stream this question was asked: "How many slopes has this valley?" About half of the class said, "Three;" the others, "Two." One who said "Three" was asked to explain. She said, "It has two slopes this way," bringing her hands together to indicate the side slopes, "and it must slope that way," pointing down stream, "or the water could not run off." All others grasped the point made by their little

teacher within a minute. In the presence of the reality faulty thinking righted itself.

An excursion to the brick mills was also made by pupils of the third year. The process of brickmaking from the beginning was observed. Not only were the brick mills studied but their association with the coal mine and gas works was thought out and stated by the pupils. They saw (1) that the brick mill is located where it is, so that it can easily get the clay which has been brought from the mine for making the brick and the coal for burning them; (2) that the gas works are near the coal mine to save cost of transporting coal; and (3) that the coke made by manufacturing the gas is used in the early stages of burning the brick in the kilns. A better illustration of associated industries would be hard to find.

Fourth year pupils in Chicago were taken on various trips, among others to the Des Plaines River, the Drainage Canal, and thru the business district to visit a big store, the Art Institute, Public Library, site of old Fort Dearborn, Water street, and other places of interest. In the upper grades excursions were made to river, canal, stone quarry, and stockyards.

In the high school, excursions were made especially for the study of physical geography, and included visits to several localities for land forms, the Weather Bureau station for study of meteorological instruments and their use, and the Public Library for its architecture and the various kinds of building stones used in its construction.

A single trip to the Hawthorne stone quarry and the Drainage Canal near by brought out many points very strikingly; among them, the following: rock strata, relation of limestone to coral and other animals, relation of Niagara limestone to the Chicago region, relation of mantle rock to bed rock, dip and strike of rock strata, underground water, making of soil by weathering, bed rock scored and striated by glacial action, character of glacial soil, development of miniature valleys in clay banks at the margin of the quarry showing growth of valleys headward, tributaries, lakes,

waterfalls, deltas, floodplains, river terraces, struggle of streams for territory, and other phases of stream action. At the Drainage Canal the great embankments on each side are of glacial drift thrown out of the canal. Here could be seen, in miniature, mountain ranges, mountain peaks made by erosion, mountain valleys and passes, alluvial cones and their relation to mountain valleys. The pupils obtained a conception of the magnitude of the Drainage Canal and an understanding of its purposes and its geographic location.

In the Normal School classes at Normal we have visited Mackinaw Dells for stream work, Sugar Creek and its branches for stream work, drainage basin and divides, the brick mills for a study of different kinds of rock and the use of clay rock taken from the mines near by, and Miller Park for a study of a dam and a reservoir.

During the summer session of 1903 in the Normal School at DeKalb, Illinois, the classes visited a creamery to see butter-making and pasteurizing of milk; Gurler's dairy farm to learn how milk could be so carefully handled as to make it unnecessary to sterilize it, at the same time making it so valuable that it sells in Chicago for twice as much per quart as ordinary milk.

The longest trip made by the students at DeKalb was one of twenty hours to Chicago. The party numbered fifty. The special purpose was a visit to the stockyards and Swift's Packing House. All else was incidental. The students asked that they be taken to as many places as possible so that they might know how to reach them for further study when in the city alone. To indicate the extent to which their request was complied with I will give a brief itinerary of the day's journey.

We left DeKalb early on a Saturday morning in a special car attached to the regular train. The ride of two hours was spent in a study of the topography of that region from the car windows. The succession of till plains, belts of morianic hills, and stream valleys merging into the Chicago Lake Plain to the east were ob-

jects of especial geographic interest. A walk of several blocks along South Water street busy with its early Saturday trade gave us a vivid idea of the labor involved in provisioning a great city.

A ride of forty minutes on the Halsted street car, took us past the court house and the new post office building, across the South Branch of the Chicago River with its many ships, along a network of railroad tracks and landed us at the entrance to the Union Stockyards.

We were met at the entrance to Swift's Packing House by three guides furnished by the firm for our party. We spent two hours in visiting the various departments of the packing house. We saw the dressing of hogs and cattle, and the great coolers containing thousands of dressed hogs and beeves. We saw the careful inspection, selection, stamping, and wrapping of Swift's premium hams and bacon. We saw the sausage chopped and stuffed by machinery, the canned meats deftly wrapped, labeled, and packed ready for shipment. We visited the rooms where great vats were filled with various mixtures to be boiled, cooled, and cut into cakes of soap. The butterine factory was a marvel of care and cleanliness to those who had supposed it otherwise.

After dinner our next ride brought us to Jackson Park and the Field Columbian Museum. A little more than an hour gave the members of the party an opportunity to visit the lake shore and to make a hurried survey of the exhibits of the museum. A ride of eight miles brought us to the Art Institute and thirty minutes were allowed for walking thru its galleries. A walk thru the various departments of the Public Library gave interesting glimpses of this magnificent structure.

It was now five-thirty and all were hungry. After lunch another ride brought us to Lincoln Park and we took a hurried survey of the zoological garden, drives, and statues of Chicago's greatest playground.

I have had no more enjoyable experience in excursion work than with a class of teachers in active service in the city of Chi-

cago during the spring of 1903. I was invited to meet a group of teachers for a lesson in geography once a week after school. At one of these meetings I asked whether any should like to go on Saturday excursions. A number wished to do so and an invitation to meet on a certain street crossing on the following Saturday brought out a dozen teachers to visit the stockyards. Two weeks later twenty-seven visited the Weather Bureau station in the Auditorium tower. Professor Cox took us into his inner room and showed us how he makes weather.

In May twenty-five teachers went forty miles to visit Dunham's Horse Farm—two thousand seven hundred acres and five hundred horses. We were met at the station, driven to the farm house and entertained at dinner. This was followed by as fine an exhibition of horses as the original of Rosa Bonheur's famous Horse Fair. We were then driven over the two thousand seven hundred acre farm with its fine grounds, woods, deer park, great fields of corn, oats, and hay, making our final stop at the railway station. All this was due to the courtesy and generosity of the owners of the farm.

One Saturday in June sixty teachers made a trip along the Drainage Canal by special electric car to Romeo, four miles on canal by boat, visited the controlling works at Lockport, took dinner at Joliet, visited the Des Plaines River to get relation of dam to power house, saw how the Illinois and Michigan Canal crosses the river, examined the lock in the canal by which boats pass the dam, and visited a stone quarry.

The number of pupils, students, and teachers taken on these trips would reach several thousand. No accident or unfortunate event occurred to detract from the value of any of the excursions. The testimony of pupils, students, and teachers has been strongly in favor of such a method of instruction. It is the common method of the German schoolmaster in teaching geography and can, I believe, be made of great use in our own schools of country, town, and city.

The following brief list suggests some of the possible school excursions: school yard and roadside after a rain, creek or river with its basin and divides, pond or lake, cliff, hills, grove or woods, wheat field, corn field, grist-mill, grain elevator, market gardens, saw-mill, lumber yard, planing mill, brick-yard, park, courthouse, tower of schoolhouse, gravel pit, stone quarry, blacksmith shop, carpenter shop, tin shop, fruit store, department store, foundry, coal mine, telegraph office, electric light works, water works, gas works, dairy, commission houses.

THE SCHOOL MUSEUM.

While lessons concerning the local physical features, local industries and home products can be treated first hand by means of the excursion, it is not possible to study by the same means the rubber industry of the Amazon basin, the cocoanut of the islands of the sea, the cork oak of Spain, the cotton fields of the south, the manufactories of New England and a long list of the topics which lie within the field of geography.

If the pupil is to obtain first-hand knowledge about things foreign to his own neighborhood, the thing must be brought to the pupil. This can be accomplished by means of the school museum.

I shall consider the school museum as I have considered the school excursion, from the standpoint of its actual use in the schoolroom. This brings me to speak of the organization and work of the Chicago Bureau of Geography, which at the opening of the school year in September, 1903, was furnishing sixty schools with small traveling museums each carried in a single box, usually an egg-crate box, containing specimens, pictures and printed articles concerning some one particular topic in the course of study in geography.

The Bureau of Geography was organized by forty principals of the Chicago schools for the purpose of collecting, installing, and circulating illustrative material among the schools. Each school represented paid an annual fee of $10.00, which was later reduced

to $5.00. This money has been spent almost entirely for material with which to install the collections. The raw material has been donated largely by the Field Columbian Museum, wholesale firms, and large business houses in Chicago and elsewhere. The labor of arranging the collections has been mainly volunteer work. Mr. Richard Waterman, who first outlined the plan of the Bureau, has done most of the work in the preparation of the material for the collections.

In September, 1903, the Bureau had one hundred and ten traveling museums representing forty-five different subjects. Some of the most valued museums have been duplicated so that all schools may have the use of one during the year.

Each museum or collection consists of three things:

1. A series of specimens as nearly complete as could be obtained to show the product in its various stages of manufacture from raw material to finished product. Each specimen is carefully installed, numbered, labeled and catalogued. Whenever the size and shape of the specimen permits, it is placed in a wide-mouthed bottle of standard size and corked. These bottles are placed in a strong pasteboard box made to order, and partitioned into twelve compartments each of which holds a bottle. If the specimen is larger it is placed in a pasteboard box without partitions.

2. Pictures on strong cardboard, ten inches by twelve inches. The pictures representing a single topic are placed in a pasteboard box made to hold cards of this size. They accompany the specimens.

3. Printed articles which will aid in the interpretation of the specimens. These may be books, parts of books divided and bound with manila sheets into pamphlets, government reports on a particular subject, selected material from government reports copied by typewriter and bound in manila covers, magazine articles separated and bound textbooks and geographical readers cut up and

arranged by topics and the material on each topic bound separately. All the printed matter on the same subject is brought together and placed in a strong pasteboard box of convenient size.

These boxes of specimens, pictures and printed articles, accompanied by a complete typewritten catalog of the collections are placed inside a wooden box, the "egg crate," and carried from school to school during the year. A school may keep a collection for one or two weeks. At the end of this time the collection is exchanged for another.

Two objections are strongly urged by some principals and teachers against the use of the same collections by many different schools. In the first place it is not possible to have each collection at the time when the topic is being treated in the regular course of study. In the second place, it is urged that it would be better for each school to build its own museum. I believe that those who offer these objections to the traveling school museum would not do so after using thirty or forty of its collections during a single year.

If the collection is studied before the topic has been reached in the regular course of study consider how valuable it is for the class to have obtained the first-hand knowledge that comes from a study of things at short range as the basis of the interpretation of the text when the topic is treated more fully later in the year. If the collection chances along while working on the topic well and good. The study of schoolbook and museum go hand in hand each to reinforce the knowledge and interpretation of the other. If the topic has been previously studied what could afford so good a review as an examination of one of these collections?

To illustrate: A collection consists of raw cotton, ginned cotton, cotton in various stages of spinning, cotton fabrics (ginghams, calicoes, finer cotton cloth, canvas), whole cotton-seed,crushed cotton-seed, cotton-seed oil, and cotton-seed cake. These specimens are accompanied by numerous pictures of the cotton plantation, cotton shipping and manufacture, in addition to much reading matter not only for the teacher but within the ability of the pupils.

If such material is used for a single class period weeks before cotton is studied in the course, the time is well spent as a preparation for future study. If such a collection can be examined months after the class have studied cotton and passed examinations on the same, how quickly will some vague and indefinite idea come out clearly and distinctly ever to be remembered with a joy unknown to the pupil who gleans ideas for the purpose of making practical use of them on examination day only?

The financial means and the labor necessary to build and maintain a satisfactory museum are not at the command of each school. Material to be used by a system of schools can be much more readily obtained by request than for a single school. As soon as the authorities of the Field Columbian Museum and the heads of large business houses understood that the material desired is to be made available to thousands of pupils they respond most heartily and generously. They could not do so for 250 individual schools belonging to the same system. Co-operation is as valuable in the building and use of the school museum as in other lines of human activity.

It is important that this material be properly used. These collections may be exhibited to the class by the principal of the school, by the teacher, or by pupils of the upper grades. The one giving the lesson must be thoroly familiar with the collection, and should have the exercise carefully planned in order to make the presentation effective.

I recall an exercise of this kind in which a seventh year teacher selected three boys to describe the cork collection. They prepared their parts well. They liked to do the talking because they had something to say. The lesson was appropriate to the work of the sixth and seventh years. The teachers and pupils of lower grades learned that the boys were giving an interesting and instructive exhibition of cork and its manufactured products, and requested that it be given in other classes. The collection was carried to every room in the building, about eight hundred children receiving

the instruction. I saw the boys giving the exercise in a second year room. Each told in clear and simple language his part of the history of cork. Then each one took a number of the specimens and passing along the aisle, showed and explained them to interested groups of children. On the following day there was laid on my desk a written exercise from these second year children on the subject of cork. They gave in their own way more information about cork than would usually be given in a sixth year class wholly dependent on books for their knowledge of the subject.

The traveling school museum has, I believe, done more to give the teachers and pupils of Chicago good working material than can possibly be given by an equal expenditure for books. The work has been of such benefit to the schools using the collections that recently on the recommendation of the superintendent of schools the board of education has assumed the financial responsibility for the extension of the work to all the schools. The work is now under the supervision of the head of the department of geography in the Chicago Normal School and an assistant has been employed to devote his entire time to the building, circulation, and care of the collections.

Work along similar lines may be done by co-operation among the teachers of a city, county, township or village. A movement of this kind has been inaugurated by the teachers of St. Clair County, Illinois. At a meeting of the St. Clair County Teachers' Association in February, 1904, a committee who had given the matter careful consideration recommended to the association that the teachers of the county undertake to develop a Circulating Geographical Museum for use among the country, village, and city schools of the county. The recommendation was favorably received and on motion of the county superintendent the sum of fifty dollars was voted from funds of the association to start the work. Nearly all of this money will be used in buying boxes, bottles, picture mounting-cards and other supplies necessary for properly installing the collections. Each school of the county has been asked

to contribute a small sum of money annually for the extension of the work. The work of arranging the collections for use in the class room is being done by the teachers of the county who volunteer their services, and by a student from St. Clair County in the Illinois State Normal University. This student works under the direction of the writer. He gives three hours daily to the work and is paid a small sum for his services.

The following list is given as suggestive of possible collections: wheat, corn, rice, nuts, spices, cocoanut, coffee, tea, cocoa, sugar, by-products of the packing house, cotton, flax, manila hemp, rubber, tanning materials, leather, wool, silk, sponge, furs, woods, paper, cork, iron, copper, gold, silver, coal and coke, petroleum, asphalt. Collections may also be made to illustrate a single country or region; e. g., Mexico, Central America, Peru, Hawaii, India, South Africa, the Philippines.

Correspondence concerning ways and means of introducing the excursion and the museum more largely into the regular work of the school is invited.

If desired we will build a sample traveling museum for the cost of material and labor. Such a collection will serve as a test of its value, be suggestive of method of arrangement, and aid in determining whether to develop the museum on a larger scale.

The Illinois State Normal University

Offers superior facilities for the training of teachers. Its equipment includes—

A library of 15,000 volumes and 4,500 pamphlets,

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The regular programs all include a review of the common branches, five terms of psychology and pedagogy, three terms of practice teaching, and such advanced courses as may be needed.

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Summer Session, 1904.

The summer session of the Illinois State Normal University consists of two terms of six weeks each, beginning June 6 and July 18.

Twenty-nine instructors have been secured for the first term, twelve for the second.

Twenty-seven courses are offered. Most of these are the regular twelve-week courses. In these students recite twice a day. There are several extra courses offered in Manual Training, Industrial Art, Drawing, Vocal Music, and Nature Study.

The primary department of the training school will be in session during the first term.

Tuition is free to all expecting to teach in the schools of Illinois. Others are charged five dollars per term. The registration fee is one dollar.

Board and room can be had at from three to four dollars per week.

The railroads of the Western Passenger Association have announced a rate of one and a third fare for the round trip on the certificate plan. A certificate must be obtained at each point where a ticket is bought en route to Normal.

For further information, address

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